

# **PCX Aerostructures, LLC Quality Notes**

## **Supplier Quality Assurance Requirements -**

### **Quality Clauses**

#### **Revision 33 – March 09, 2018**

1. All special processes required by the Purchase Order must be performed by sources that are approved by the prime customer, and to the latest revision of the applicable process specification.
2. As applicable, copies of all material, processing, and test certifications must accompany each shipment of parts if required by the engineering drawing, blueprint, applicable specification or the Purchase Order.
3. Originals or Copies of chemical and physical analysis certifications must accompany each shipment of parts for all supplier purchased material, PCX Aerostructures PO, job number and/or reference number must be noted on each certification.
4. Parts must be inspected and accepted by the supplier.
5. All parts with a non-conformance to the drawing requirements must be tagged with the discrepancy. The packing slip should note the discrepancy along with the numbers discrepant (including affected Serials Numbers if applicable). Nonconforming product cannot be shipped to PCX Aerostructures without written authorization from PCX Aerostructures Purchasing Department personnel.
6. First Article Inspection per latest revision of AS9102 is required for 1) first time production, 2) equipment, tooling, process or die changes that may affect form, fit or function, or 3) if there has been a 2 year production break. The FAI shall be performed by the supplier for each dash number. The FAI report shall indicate the actual measurement of each characteristic on the drawing, parts list and Op sheet (if applicable). The preferred FAI format is AS9102. An amended FAI report containing the measurements of the dimensions affected, is required for any changes as directed by AS9102. Also see Q-Note 50 regarding process changes.
7. During the performance of this Purchase Order PCX Aerostructures, its customer and/or regulatory agencies, have the right of access to the supplier's facility and their sub-tier supplier's facilities, in order to determine and verify product quality, records, processes and material. PCX Aerostructures' acceptance of a process or product does not absolve the supplier of the responsibility to provide acceptable product, nor does it preclude subsequent rejection by our customer.



8. All parts must be protected against damage and corrosion during delivery and performance utilizing standard commercial packaging procedures, except where a contract specific packaging requirement is identified in the purchase order.
9. The supplier must ensure that materials utilized in the performance of this order (whether customer, PCX Aerostructures or supplier furnished), are segregated and controlled to ensure traceability and prevent intermingling with other materials.
10. If applicable, assigned serial numbers shall be maintained throughout all manufacturing cycles and shall be identified on both the parts and all documentation provided
11. For all close tolerance holes (.0015" or less) GO and NO GO gauging techniques are not acceptable. Inspection equipment utilized must have the capability to attain a measurement of 10% of tolerance being inspected, e.g. dial bore or air gauging. (Reference ANSI/NCSL-Z540-1-1994 and ISO-10012).
12. Suppliers of Bell Helicopter raw material must use domestic milled material.
13. Parts requiring bushing installation per BAC 5435 must comply with BAC-5435, PSD #6-34 (Sealant Installation of Bushings).
14. Performance on this order is subject to BOEING D6-82479 requirements if either the Engineering Drawing of the supplied Operation sheet requires a key or critical characteristic.
15. If a designated part (Ref: D6-1276/D36002). A forging manufacturing plan must be written per applicable specification(s) and submitted for Boeing approval prior to fabrication of production forgings. Certifications for first and subsequent lots of production forgings shall indicate the Boeing approval memo number for the particular forging part/dash number produced.
16. Supplier to maintain Foreign Object Elimination (FOE) Detection/Debris (FOD) Program (reference NAS 412) adequate for the process, product or service being performed under the requirements of this PO.
17. This is an F-18 part. When NDT is required, the source performing such inspection must have a written NDT procedure that has been approved by the prime customer. Certifications supplied must indicate customer approval.
18. Supplier must flow down requirement for raw material supplier to be approved by the prime customer as applicable.



19. Purchase orders for Standard Hardware of assemblies that include Standard hardware (i.e., BAC, AN, NAS, STM, MIL, etc.) are to be satisfied with material of the latest specification revision level in effect and must comply with all obsolescence/supersede criteria when applicable.

20. Items on this Purchase Order are for Boeing Chinook CH-47 Aircraft and must comply with all Boeing Philadelphia engineering and quality requirements, including D-590 and D1-4426 specifications for this particular item(s) ordered. Processor must be, and/or use D1-4426 sources and flow down the requirements of D1-4426 to any sub-tiers.

21. In compliance with EPA regulations, supplier must submit a yearly letter of disclosure stating, either positive or negatively, whether or not ozone depleting substances have been used in the performance of the Purchase Order. Any positive statements must name the substance(s) used, all well as the specific items they were used to manufacture.

22. Items on this Purchase order are for Sikorsky Aircraft use and must be controlled and labeled/marked per applicable Sikorsky Aircraft requirements.

23. Original Manufacturer's Certification is required from a Qualified Products List Approved Source.

24. Supplier is to machine 100% complete LESS the processing and finishing to the B/P and the P/L revision levels called out below and to the Revision maintenance records enclosed.

25. Supplier is to machine 100% complete INCLUDING the processing and finishing to the B/P and the P/L revision levels called out below and to the Revision maintenance records enclosed.

26. Part number and grain direction are to be clearly marked on all material if required by the scope of this PO.

27. Confirm in writing. Do not duplicate. Inspection Required.

28. Vendor to supply all raw material and certifications. Requests to use alternate material must be submitted to the buyer, in writing, and contain specifics as to EACH end customer material requirement that will not be met. Vendor shall not proceed with manufacture unless directed by the buyer in writing.

29. Material should be skidded/boxed/packageged separately by Part Number. Do not co-mingle material. If the material is co-mingled by the supplier, PCX Aerostructures will debit the supplier for PCX Aerostructures labor to separate the material.



30. Parts must comply with the requirements of DFAR 252.225.7009, "Preference for Domestic Specialty Metals.

31. The supplier shall maintain a Quality Management System that is compliant to ISO 9001, AS9110 or AS9100. Suppliers who do not meet this requirement must have written authorization from PCX Aerostructures to deliver product.

32. Supplier must submit a Certificate of Conformance summarizing all processes and test performed on the parts, along with the name of each facility utilized.

33. Supplier shall manufacture inspection aids per this Purchase Order. Configuration is to be coordinated with PCX Aerostructures. PCX reserves the right to inspect and verify all inspection aids prior to supplier part fabrication. All inspection aids must be delivered with the final part shipment.

34. If a retention period for quality records, certifications and documentation is not specified in a prime contract requirement, these records must be maintained for a period of 50 years after final payment of this purchase order. After this time, the supplier shall not destroy such records without giving PCX Aerostructures ninety days advance written notice.

35. Material consigned to the supplier may not be substituted by any other material to complete the order requirements. If an item is scrapped in excess of the scrap allowance, it is the supplier's responsibility to immediately notify the PCX Aerostructures buyer in writing, otherwise the supplier may have to run a small lot. The supplier will be liable for the replacement costs, and accountable for all material consigned.

36. Upon receipt of a drawing from PCX Aerostructures, it is the supplier's responsibility to thoroughly review and understand the drawing geometric tolerance symbols, and to be capable to comply with the requirements prior to manufacturing. Technical questions shall be submitted to the PCX Aerostructures buyer in writing.

37. This Purchase Order requires SPC to be performed by the supplier.

38. Suppliers will be notified when acceptable quality ratings are not met for 2 consecutive periods. If, after 90 days, no improvement is made, the supplier will be removed from the PCX Aerostructures ASL.

39. Government Source Inspection is required.

40. Customer Source Inspection is required.



41.A PCX Aerostructures First Piece Inspection is required. The supplier must advise the PCX Aerostructures Quality department with 24-hour Advance Notice of part coming due for inspection. Acceptance by PCX Aerostructures does not release the supplier of any liability to manufacture the part to the specifications, drawings or Purchase order requirements.

42.BOEING MESA Standard Q-Note – Production: Items on this purchase order are for the Boeing AH-64 Apache program. Quality records must be maintained, and be accessible within a reasonable time, for 40 years after completion of this Purchase Order. Boeing document EPB17-119 applies. If BAC specifications apply, refer to Boeing document D1-4426 for PSD's and Certify to PSD's 8-\* that are applicable. Certification must contain Material Control (MC) number (for raw material only). Export Control Classification Numbers (ECCN's), if applicable, are contained in the text of this PO.

43.BOEING MESA Standard Q-Note – O&R: Items on this purchase order are for the Boeing AH-64 Apache program. Quality records must be maintained, and be accessible within a reasonable time, for 40 years after completion of this Purchase Order. Boeing document DE-STD-2 applies. Refer to Boeing document D1-4426 for special processing. Certification must contain Material Control (MC) number (for raw material only). Export Control Classification Numbers (ECCN's), if applicable, are contained in the text of this PO.

44.BOEING Philadelphia Standard Q-Note – Production: Items on this purchase order are for the Boeing CH-47 program. Quality records must be maintained, and be accessible within a reasonable time, for 50 years after completion of this Purchase Order. If BAC specifications apply, refer to Boeing document D1-4426 for PSD's and Certify to PSD's that are applicable. Export Control Classification Numbers (ECCN's), if applicable, are contained in the text of this PO.

45.BOEING Philadelphia Standard Q-Note – O&R: Items on this purchase order are for the Boeing CH-47 program. Quality records must be maintained, and be accessible within a reasonable time, for 50 years after completion of this Purchase Order. If BAC specifications apply, refer to Boeing document D1-4426 for PSD's and Certify to PSD's that are applicable. Export Control Classification Numbers (ECCN's), if applicable, are contained in the text of this PO.

46.DoD/AMCOM Standard Q-Note – Production: Quality records must be maintained, and be accessible within a reasonable time, for 25 years after completion of this Purchase Order. DoD document QE-STD-1 applies. If BAC specifications apply, refer to Boeing document D1-4426 for PSD's and Certify to PSD's that are applicable.

47.DoD/AMCOM Standard Q-Note – O&R: Quality records must be maintained, and be accessible within a reasonable time, for 25 years after completion of this Purchase Order. DoD



document QE-STD-2 applies. If BAC specifications apply, refer to Boeing document D1-4426 for PSD's and Certify to PSD's that are applicable.

48. Sikorsky Standard Q-Note: Quality records must be maintained, and be accessible within a reasonable time, for 40 years after completion of this Purchase Order. Sikorsky documents SSQR-01 and SA908S apply. Certification must state "Parts and/or services are destined for Sikorsky Aircraft". No design changes (Class 1 or Class2) of any kind are allowed without PCX and Sikorsky concurrence.

49. Columbia Standard Q-Note: Quality records must be maintained, and be accessible within a reasonable time, for 50 years after completion of this Purchase Order. Columbia document CHI-M-1336 applies.

50. GENERAL QUALITY REQUIREMENTS (REVISED 1/02/2014): Compliance with AS9100 OR ISO 9001 (latest revisions) is required; Compliance ANSI / NCSL Z540-1-1994 OR ISO 10012, latest revision is required; All certifications must include Purchase Order Number, Part Number(s), Part Number Revision(s), Serial Number(s), Operation Number(s), Specification(s) and Revision Level(s), Amendments (and PSD's if applicable), an Authorized signature and typed name and title of signatory. Certifications must also include supplier's approved plan title, number and revision/date as applicable. For Raw Material (Boeing Mesa only) a Material Control (M/C) Number is also required; These PO requirements must be flowed down to all sub-tier suppliers as applicable. All suppliers / sub-tier suppliers performing "special processes" requiring OEM/Prime approval must be on the OEM/Prime's "Approved Source/Supplier List" for that process at the time the material is processed. Supplier shall notify PCX Aerostructures Purchasing IN WRITING for approval of changes in product and/or processes; Supplier must have written authorization from PCX Aerostructures Purchasing prior to making any changes to product and/or processes; Supplier shall notify PCX Aerostructures Purchasing IN WRITING when a delivered product and/or affecting process nonconformance is discovered or suspected (including suspect counterfeit parts); Nonconforming product cannot be shipped to PCX Aerostructures without written authorization from PCX Aerostructures Purchasing PCX Aerostructures, its customer's and regulatory authorities retain the right of access to all facilities involved in this order and all applicable records; Quality documentation records and certifications must be maintained for a period of 50 years after final payment of this PO. After this time period the supplier shall not destroy such records without giving PCX Aerostructures Purchasing and Quality ninety days written notice and receive approval for the destruction of records. IF BAC Specifications apply: refer to Boeing document D1-4426 for PSD's and certify to PSD's that are applicable. If Sikorsky part the certification must state "Parts and/or services are destined for Sikorsky Aircraft". If supplier uses Boeing/Government supplied tooling in the performance of this PO, Boeing document D950-11059, SEC. 9 APPLIES.





51. Flight Safety Part: If this is a Critical or Flight Safety Part – Supplier must submit manufacturing plan and associated traveler to PCX Aerostructures Engineering for approval. The supplier's original plan and traveler cannot be updated/changed and used to process product without re-submittal and approval. Also see Q-Note 76.
52. Boeing document D950-11059, Section 9 – Boeing/Govt “Each Use Condition Check” applies when using PCX Aerostructures supplied BAC/Govt tooling or gages.
53. S-1000 GE Aviation Quality system requirements for suppliers.
54. S-1001 GE Aviation Supplier source substantiation.
55. S-1002 GE Aviation Supplier requirements for characteristic accountability, verification, and quality planning.
56. S-400 GE Aviation certified materials test laboratories (CMTL) metallic materials.
57. S-450 GE Aviation certified materials test laboratories (CMTL) non-metallic materials.
58. S-528 GE Aviation Quality requirements for forgings wrought products / forgings (closed die, seamless rings, welded rings, open die, etc.)
59. HPS-010 Heroux-Devtek Supplier Quality Assurance Requirements, applies.
60. HPS-020 Heroux-Devtek Supplier MBD/DPD Requirements, applies.
61. This PO requires that the supplier take appropriate measure to prevent the purchase or use of counterfeit and suspect unapproved parts per AS6174 section 3.1.
62. This Purchase order contains GE part numbers, that are for GE-A end use.
63. FAR Clause 52.223-18: Contractor policy to ban text messaging while driving, applies.
64. S-390 GE Shot peen process controls.
65. S-535 GE Envelope control of ultrasonic inspection.
66. S-294 GE Periodic process verification testing of critical forged parts.
67. Lockheed Martin (LMCO) Appendix QJ, latest revision applies. Seller shall ensure all Seller sub-tier purchase orders (PO) and/or associated PO documents for LMCO controlled processes must include the data elements and statements per section F 12 of this document.
68. S-1005 GE-AJA Quality System Requirements apply.



69.S-1007 GE-AJA FAI Requirements apply.

70.This purchase order contains GE-AJA part numbers that are for GE-AJA use.

71.Boeing Mesa O&R – Boeing document DE-STD-02 applies in lieu of EPB17-120.

72.Boeing Mesa Production – Boeing document DE-STD-1 applies in lieu of EPB17-119.

73.Historical data proving that previously processed “shelf stock” was processed by supplier(s) that were on the OEM/Prime’s Approved List at the time of processing must be included with shipment.

74.This PO is for Solar Turbines, traceability is per ES 9-76 CL A Type 1 is required.

75.This part number is process controlled per PPAP requirements. No changes to manufacturing process, speeds, feeds, tools, programs or machining center are allowed without prior written approval from PCX Aerostructures engineering.

76.If the supplier is performing work or having inspection responsibilities pertaining to a Flight Safety Part (ie. containing a CSI, CC, Bell Classified Item, KC etc.) they must be trained in the requirements of such a product.

77.This PO contains Boeing Digital Product Data – the requirements of [D6-51991 Quality Assurance Standard for Digital Product Definition at Boeing Suppliers](#) applies.

78.This PO is for product(s) which require a full Government “FATR” before sale in accordance with FAR Clause 52.209-3 (First Article Approval-Contractor Testing) and DA PAM 95-9 (Management of Aviation Critical Safety Items) in addition to standard AS9102 FAI Requirements. Please note the following ADDITIONAL items must be supplied with the initial AS9102 FAI paperwork:

1. Complete MC# must be listed for all raw material on all Certificates of Compliance (C of C, AKA “Certs”) from supplier and all sub-tiers (if there is an MC# requirement).
2. PCX PO number and any flowed down USG contract number(s) must be listed on all sub-tier PO’s and Certs.
3. PO and Certs from all suppliers, including Labs, must be included in the supplier’s deliverable FAI package.
4. Supplier PO to sub-tiers must include Contract number, PN, complete MC# and that Certs are required.





5. Supplier must flow down QE-STD-1 on all PO's and it must be acknowledged on all certs.
6. If an area for signature exists, all PO's from supplier to sub-tiers must be signed.
7. Any serial numbers scrapped at supplier or sub-tiers must be listed on Certs.
8. All frozen planning must be followed exactly.
9. Any units used as test samples must be identified (Serial Numbers) clearly on Certs.
10. AS9102 forms must contain FULL descriptions for all processing including revision, types and levels. Proof of current calibration for all gages is required.
11. Any processes that require certification (i.e. NDT, Heat Treat) require a copy of NADCAP certificate, and Level 2 or 3 NDT inspector certifications.

## 79. MATERIAL SUBSTITUTION PROHIBITION

### A. Unauthorized Material Substitution (General)

Unauthorized material substitutions are not permitted. Unauthorized material substitution includes any deviation from the engineering definition of a raw material. Engineering definition includes design drawing and applicable specifications, product specification, form, size, shape, chemistry, melt method, origin, temper/condition, product testing or surface finish. Alternate materials specified in the engineering definition (and often described as approved material substitutions therein) do not constitute unauthorized material substitution. Terms and definitions for metallic materials and processing used herein are clarified in ARP1917.

### B. Metallic Materials (Specific)

**Temper or Condition Conversion** - Unless specifically authorized by the engineering definition, conversion of a raw material (i.e. heat treat to change the temper or condition of the material) constitutes material substitution of the condition provided by the manufacturer.

**Metallic Raw Materials** – Engineering drawings may refer to obsolete or superseded specifications covering several forms, thicknesses, widths, etc. of the alloy or alloys. The required characteristics of these materials are defined not only by the objective test standards of the specification, but by the processes/methods by which this final form is achieved. These requirements are often captured in the definitions of the required material forms, and may not be explicitly called out in the detailed requirements. The raw material certification results from both the process used to make it and the tests to verify basic properties.

Seller shall ensure that metallic materials covered by current or obsolete/superseded specifications are produced using the standard industry practices designed strictly for the production of stock to the specified thickness, diameter, width or cross sectional area, achieved by thermo-mechanical processing or casting process. Chemical, electrochemical and mechanical methods used for the removal of surface scale or contamination, or the production of the required surface finish, in accordance with the material specification are acceptable.

Raw material must not be re-certified with respect to thickness, diameter, width or cross sectional area or product form. Machining or cutting of thicker product or other product forms shall not be supplied in lieu of specified product unless specifically authorized by PCX. Raw



material certifications for material or parts shall reflect the form and size of the raw material as originally manufactured by the raw material producer.

C. Specification Supersession:

For government specifications and standards canceled after June 1994, Seller and subcontractors at all tiers shall use the last active revision of the canceled specification and standard until an acceptable replacement is included in the requirements of this Contract. Contact the PCX Buyer in the event of any inconsistency in applicable specification or standard.

D. Reports (Full Pedigree from melt to final product) - Raw material certifications shall show clear traceability to the manufacturer(s) of the raw material including ingot source, all thermo-mechanical processing (i.e. forging, rolling, drawing, etc), heat treatment, chemical processing and inspections as required by applicable raw material specification requirements.

E. Chain of Custody (Disguising intermediate ownership) – Suppliers shall not disguise the pedigree of material or chain of ownership by removal of a previous supplier's name, nomenclature or identification.

F. Source of Additional Information - Addition information and guidance may be found by contacting your PCX Buyer.

G. The substance of this clause shall be flowed in all subcontracts at every tier.

80. Bell SQRM-01 is a requirement on this PO.

81. If, in the course of the execution of this PO, the supplier is required to be on the OEM or Prime customer's Approved List (e.g. an ASL, APL, etc), it is incumbent on the supplier to verify whether they are on that list prior to acceptance of this PO. If the supplier does not have access to this information, they should contact their PCX buyer for same.